

CLAIMS

Claims 1-27 (canceled)

Claim 28 (currently amended): A method for forming a hydroform, comprising:
providing a first tubular structure having an outer surface;
disposing an adhesive structural material upon the outer surface with an applicator wherein the adhesive structural material includes epoxy;
providing a second tubular structure having an inner surface defining a bore;
hydroforming the first tubular structure while the adhesive structural material is located upon the outer surface thereby forming a hydroformed contour of the first tubular structure with the adhesive structural material located upon the contour; and
adhering the adhesive structural material to the inner surface of the second tubular structure.

Claim 29 (cancel e)

Claim 30 (currently amended): A method as in claim 28 29 wherein the step of hydroforming occurs while at least a portion the first tubular structure and the adhesive structural material are located within the open bore of the second tubular structure.

Claim 31 (cancel e)

Claim 32 (canceled)

Claim 33 (currently amended): A method as in claim 28 wherein the adhesive structural material expandable material is epoxy-based.

Claim 34 (currently amended): A method as in claim 28 29 wherein the second tubular structure is metal.

Claim 35 (previously presented): A method as in claim 34 wherein the second tubular structure is formed of aluminum or steel.

Claim 36 (previously presented): A method as in claim 28 further comprising:

assembling the first tubular structure to a vehicle as a portion of a frame of the vehicle.

Claim 37 (canceled)

Claim 38 (previously presented): A method as in claim 28 wherein the adhesive structural material is activated for curing at a temperature in the range of about 148.89 °C to about 204.44 °C.

Claim 39 (currently amended): A method as in claim 28 29 wherein the adhering step is performed prior to the step of hydroforming.

Claim 40 (currently amended): A method for forming a hydroform, comprising:

providing a first structure having an inner surface defining an open bore;

providing a second structure having an outer surface;

positioning an adhesive structural material within the open bore of the first structure between the inner surface defining the bore and the outer surface of the second structure; and

hydroforming the first structure and second structure while at least a portion of the structural material is located in the open bore wherein the hydroforming includes injecting a liquid under pressure into the bore such that an outer surface of the first structure assumes a shape of a mold; and

adhering the adhesive structural material to the inner surface defining the bore and to the outer surface of the second structure.

Claim 41 (canceled)

Claim 42 (previously presented): A method as in claim 40 wherein the first structure is tubular.

Claim 43 (previously presented): A method as in claim 40 wherein the second structure is tubular.

Claim 44 (currently amended): A method as in claim 40 wherein the step of positioning the adhesive structural material within the open bore of the first outer tubular structure includes disposing the adhesive structural material upon the outer surface of the second inner tubular structure.

Claim 45 (currently amended): A method as in claim 40 wherein the adhesive structural material is expandable at a temperature greater than a [its] glass transition temperature of the adhesive structural material expandable material.

Claim 46 (currently amended): A method for forming a reinforced hydroform automotive vehicle frame structure, comprising:

providing an outer elongated metal tubular structure having an inner surface defining an open bore;

providing an inner elongated metal tubular structure having an outer surface;

applying an adhesive structural material to at least one of the inner surface defining the open bore and the outer surface of the inner tubular structure;

introducing the adhesive structural material within a space defined between the inner surface of the outer tubular structure and the outer surface of the inner tubular structure; and

hydroforming the outer tubular structure and the inner tubular structure with the adhesive structural material therebetween to form the automotive vehicle frame structure and for forming a first hydroformed contour in the inner tube and a second hydroformed contour in the outer tube wherein the first hydroformed contour is adjacent to and corresponding with the second hydroform contour and at least a portion of the expandable material is located between the first hydroformed contour and the second hydroformed; and

bonding the adhesive structural material to at least one of the tubular structures wherein the bonding is performed prior to the step of hydroforming;

wherein the hydroforming includes injecting a liquid under pressure into the bore such that an outer surface of the outer structure assumes a shape of a mold; and

wherein the adhesive structural material is epoxy based.

Claims 47-49 (canceled)

Claim 50 (previously presented): A method as in claim 29 wherein the hydroforming includes injecting a liquid under pressure into the bore such that an outer surface of the first structure assumes a shape of a mold.

Claim 51 (new): A method as in claim 40 wherein the adhesive structural is epoxy-based.

Claim 52 (new): A method as in claim 40 wherein the second structure is metal.

Claim 53 (new): A method as in claim 52 wherein the second structure is formed of aluminum or steel.

Claim 54 (new): A method as in claim 40 further comprising:
assembling the first structure to a vehicle as a portion of a frame of the vehicle.

Claim 55 (new): A method as in claim 40 wherein the adhesive structural material is activated for curing at a temperature in the range of about 148.89 °C to about 204.44 °C.

Claim 56 (new): A method as in claim 40 wherein the adhering step is performed prior to the step of hydroforming.

Claim 57 (new): A method as in claim 46 wherein the adhesive structural material is expandable at a temperature greater than a glass transition temperature of the adhesive structural material.

Claim 58 (new): A method as in claim 46 wherein the outer tubular structure is formed of aluminum or steel.

Claim 59 (new): A method as in claim 46 further comprising:
assembling the outer tubular structure to a vehicle as a portion of a frame of the vehicle.